

RECOVERY INVESTMENTS AND THE EUROPEAN ENERGY TRANSITION

A Green Recovery Tracker deep dive

The Green Recovery Tracker project analysed recovery plans and measures in 17 EU countries, covering 88% of the total grants available through the EU Recovery and Resilience Facility. This briefing provides an in-depth analysis on the relation between the assessed recovery spending and the energy transition. Our analysis shows that 8% of all recovery spending is directly relevant to the energy sector's transition while overall, €204bn out of the €685bn analysed will accelerate the green transition.* Many of these measures, such as investments in electric mobility, heat pumps and hydrogen production, will further increase demand for renewable electricity. However, only a relatively small part of recovery measures will specifically support clean energy production, which currently is mostly held back by national regulatory hurdles.

Overall, the Recovery and Resilience Facility's impact on the supply of clean electricity will likely be smaller than its impact on demand for it. Legislative steps unlocking the potential of renewable energy generation are therefore necessary, also considering the higher renewable energy targets that will be negotiated as part of the European "Fit for 55" package. Such steps are also a prerequisite for most other green recovery measures to be able to make an ultimately positive impact.

CONTEXT: THE ECONOMIC RECOVERY FROM THE COVID-19 CRISIS AND THE ENERGY TRANSITION ARE CLOSELY CONNECTED

Two urgent and all-encompassing political challenges unfolded simultaneously in 2020 and 2021: the need to respond to and recover from the COVID-19 crisis, and the need to realize the European Green Deal. Politicians and policy experts alike quickly agreed that an effective allocation of economic recovery spending would require the pursuit of a "green recovery": addressing the economic crisis as well as the climate and biodiversity crises.¹

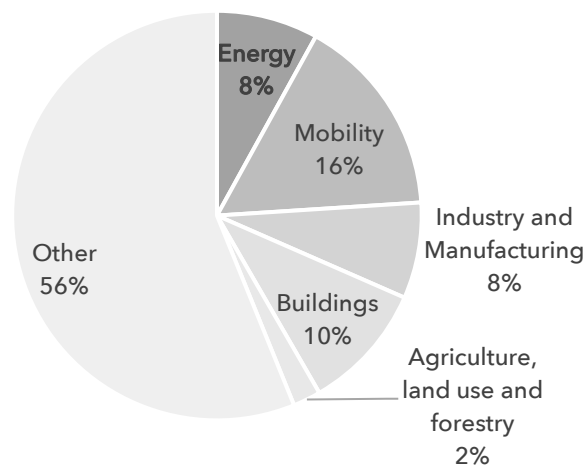
Moreover, even before the crisis, the EU was facing a significant financing gap with regards to the European energy transition targets in most member states. The European Commission estimates that the recently agreed higher EU climate target for 2030 requires an approximate doubling of total investments in the energy transition until 2030.² Compared to existing plans, the expansion of renewable energy must increase by a third for the EU to be on track for achieving its overall targets.³

* Including RRF loans and other funding sources such as domestic budgets in cases in which they were used to (co-)finance recovery programmes.

ARE RECOVERY INVESTMENTS IN THE EU ENERGY SECTOR ALIGNED WITH THE GREEN TRANSITION?

Our assessment of recovery measures in 17 EU member states shows that 8% of the total recovery investments (€55bn out of €685bn) are invested into the energy sector, for example into electricity or gas infrastructure. By comparison, larger shares are invested in the mobility (16%) and buildings (10%) sectors, often in measures that will advance the green transition by increasing the opportunities for the direct use of (clean) electricity, such as electric mobility or heat pumps. Furthermore, hydrogen is a prominent recipient of EU recovery funds.

EU Recovery Investments, by sector



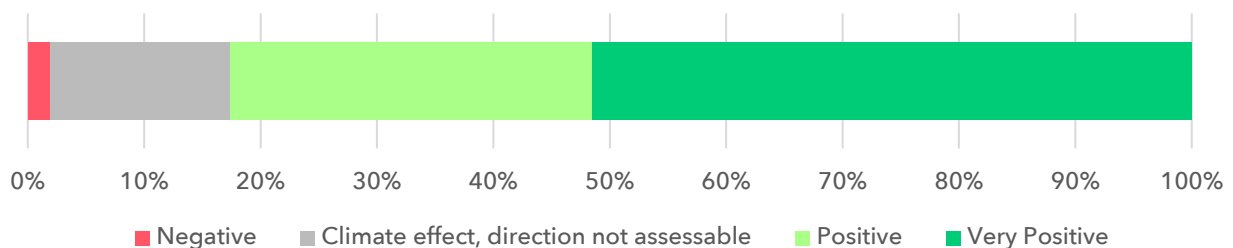
About our data

This briefing is based on data gathered through the Green Recovery Tracker, a joint project between Wuppertal Institut and E3G, in collaboration with national experts. The data used was last updated on 16 July 2021 and is available on the website www.greenrecoverytracker.org. A full list of all countries covered, and the status of the documents on which this analysis is based for those countries, can be found in Annex 2. Individual recovery measures have been assigned to the specific sectors based on the question what sector's emissions will be most affected by the respective measures.

83% of the energy investments assessed are expected to make a positive or very positive contribution to the green transition, for example through enabling improvements to electricity grids, the production of green hydrogen, and increasing renewable energy generation.

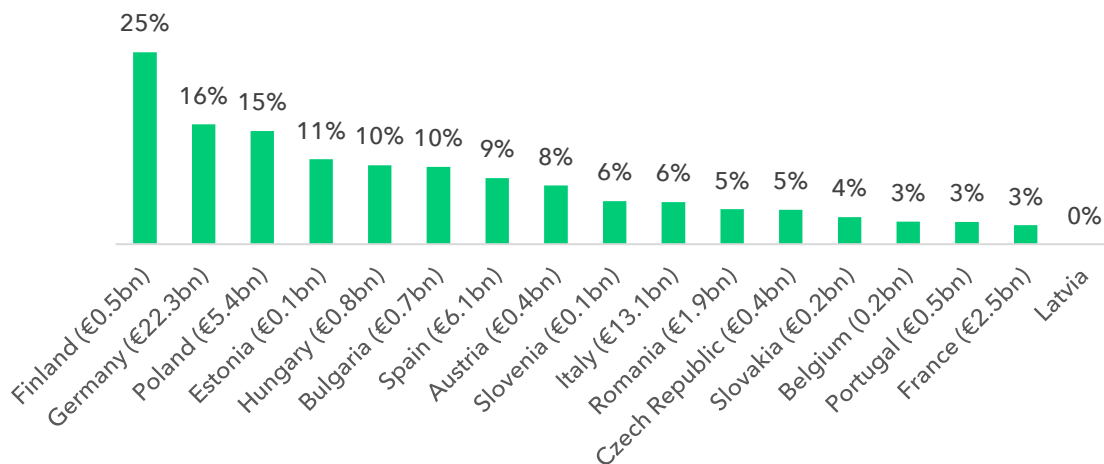
At the same time, the climate impact of €8.5bn (16%) in investments could not yet be determined and will depend on how the recovery plans are implemented (for comparison: this is more than the entire recovery funding allocated in the Czech Republic). These investments include investments in gas-based technologies where it is not yet clear whether they will be fully based on renewable hydrogen or whether they risk creating fossil gas lock-ins. Lastly, we identified €1.1bn in energy recovery spending which seems to be harmful to the green transition, which include planned investments into what will most certainly be fossil gas infrastructure in Bulgaria and Romania.

Distribution of energy recovery spending in EU, by climate assessment category (total = €55bn)



Furthermore, our data shows that different governments prioritized investments in the energy sector to different extents when developing their recovery plans. Finland achieved the highest share of energy-related spending by far. Germany is using the funding to lower its renewable energy surcharge, thereby making the use of electricity more competitive relative to fossil fuels such as oil and gas, and to enable large scale investments in hydrogen. Poland is offering significant opportunities to scale up the offshore wind power industry, though mostly through loans. Of course, it must be noted that countries with access to more recovery funding are able to allocate higher absolute amounts to any single sector without necessarily having the highest share, as can be seen in the absolute numbers which are also included in the chart below.

Recovery spending on energy in EU countries,
as share of overall recovery spending
and in absolute values



Importantly, the process for developing Recovery and Resilience Plans in the European Union also put an equal emphasis on reform measures in addition to investments, with the European Commission emphasizing that “recovery and resilience plans need to reflect a substantive reform and investment effort. Both reforms and investments must be coherent and adequately address the challenges in the individual Member State”.⁴ It is in this regard that the recovery planning process has perhaps left the largest delivery gap, from a green transition perspective, as almost all recovery plans are based on National Energy and Climate Plans (NECPs) which often were already unambitious compared to the EU’s old climate target, and which will have to be updated now that the EU has agreed a new and higher climate target.

Instead of using the availability of recovery funds and the associated planning process as an opportunity to enable additional ambition, including on the strategic level, most governments opted towards the status quo. A notable exception is the Spanish government, which used the process to bring energy transition targets forward from 2025 to 2023. Furthermore, recent reports about the potential inclusion of national planning processes for decarbonization and phasing out coal phase Bulgaria and Romania are promising, and evidence for the potential of recovery plans to include more substantive reform measures when there is more time and space for their development and elaboration, as has recently been the case in both these countries.

Overall, however, the European Commission has clearly criticized shortfalls in national planning for the energy transition in many of its assessments of recovery plans. Below are three examples from the Commission’s assessments on “challenges related to the green and digital transition” in the working documents analysing national plans:

- Germany: *“Germany needs to step up policy action to achieve carbon neutrality in time and to reap the benefits of the digital transition. An overarching objective of the Recovery and Resilience Facility is to support the twin (green and digital) transition, an aspect where Germany has considerable room for improvement.”⁵*
- Italy: *“To reach the 30% share of renewables in gross final energy consumption as stipulated in the NECP, Italy needs to swiftly adopt additional policies and measures, streamline permitting procedures to reduce administrative burden, revamp and repower existing installations. The planned increase[d] penetration of renewables in the electricity and transport sectors represents an important challenge and should thus be supported by adequate policies.”⁶* [note: this refers to Italy’s old NECP, which will likely require an upwards revision to be aligned with the new EU climate target]
- Slovakia: *“Slovakia is not yet sufficiently prepared for the green transition, and investment is lacking in many areas. Investments in the green transition are particularly challenging due to a limited absorption capacity of funds, and most government plans are only in an initial phase.”⁷*

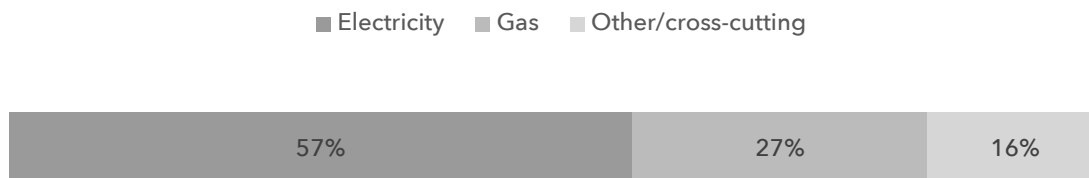
These examples illustrate that the recovery planning process has, all in all, not been used to strategically reorient national planning and budgeting in line with the EU’s climate targets. Given that this process is now unavoidable due to the EU Climate Law, this task must remain a top priority item on the agenda of national governments – and solutions must be found for all financing needs which are not yet covered, either through other sources of public finance, or private finance, depending on the context.

WHAT PARTS OF THE ENERGY SYSTEM WILL MOST BENEFIT FROM RECOVERY INVESTMENTS?

A breakdown of the €55bn in recovery investments into the energy sector shows that most of the funds will support the electricity system, especially through support for renewables (€25bn) and grids (€6bn) (see chart below). Around one quarter of the investments will support the gas sector.[†] The share of gas investments is relatively high compared to the respective investment needs for electricity and gas in the energy transition. For instance, the International Energy Agency’s net-zero scenario foresees annual global investment needs of \$1,600bn in electricity generation and a further \$800bn in electricity networks by 2030, compared to \$165bn for hydrogen, which makes up most gas-related investments in European recovery spending.⁸ Notably, electricity grid investments have been stalling in the EU recently, as net additions to the grid have decreased since 2015.⁹

[†] For this analysis, “electricity” investments include investments in electricity generation, transport and storage, while “gas” investments include investments in gas transport infrastructure as well as generation facilities for hydrogen.

Majority of energy recovery investments are supporting electricity infrastructure



Recovery investments in energy are distributed unevenly between countries. For instance, the renewables investments include €11bn allocated by the German government out of the domestic budget to a lowering of the renewable energy surcharge, and €3.7bn that the Polish government is preparing to offer through the EU Recovery Facility for offshore wind energy development, mostly in the form of loans. Other countries that are planning to offer public investments for renewables include Italy (€5.5bn) and Spain (€3.2bn). Investments in electricity grid infrastructure are planned in Bulgaria, Finland, Hungary, Poland, Slovenia, and Spain.

In a climate neutral economy, the efficient direct or indirect use of clean electricity will be the backbone of the energy system, replacing fossil fuels such as coal, oil and gas.¹⁰ An expansion of renewable electricity generation and infrastructure is hence needed - but it is likely that the Recovery and Resilience Facility's impact on the supply of clean electricity will likely be smaller than its impact on demand for it, for example through positive investments that are supporting the deployment of electric heat pumps or electric mobility infrastructure. This can be seen in the relatively limited significance of investments in electricity infrastructure, at 4.6% of all investments, relative to investments into the end-use sectors buildings, mobility and industry, with 34% of the overall amount mobilized, including for significant electrification measures.

However, it is often not a lack of financing but regulatory hurdles that are constraining the expansion of renewables, which are by now usually the most cost-competitive form of energy generation.¹¹ These hurdles include, among others, overly complex permitting procedures and regulations undermining the development of wind power in populated areas.¹² It is hence most important for governments to unlock this potential by creating a regulatory environment that encourages renewables development rather than constraining it, and doing so could be a constructive next step following the agreement on national recovery plans. It would also align well with the negotiations for the EU's Renewable Energy Directive and the upcoming revision of National Energy and Climate Plans.

A closer look: gas investments through the RRF

The future role of gases in the energy transition is among the most controversial issues in energy policy at present. This was also reflected in the negotiations for the implementation of the EU Recovery and Resilience Facility, for which green groups and some EU member states demanded a complete exclusion of support for all fossil fuel, including gas, infrastructure. At the same time, other member states argued for the importance of gas as a so-called “transition fuel”.¹³ In the end, the European Commission’s guidance stated that, while support for fossil fuels should be avoided, *“limited exceptions for measures related to power and/or heat generation using natural gas, as well as related transmission and distribution infrastructure, can be made to this general rule, on a case-by-case basis”*, especially in member states which are currently relying on *“more carbon-intensive energy sources, such as coal, lignite or oil”*.¹⁴

During our work, we followed the development process for national recovery plans in several EU member states closely, often assessing different versions of national plans throughout the development process. While doing so, we repeatedly encountered instances of planned investments in fossil gas infrastructure being reduced or removed from plans, showing the efficacy of such EU-level guidance, binding criteria and their enforcement by the European institutions. However, the loophole cited above nonetheless resulted in the inclusion of several, direct or indirect, fossil gas projects in final plans. For example, member states such as Czechia, Italy and Poland included support for fossil gas boilers in their national plans, despite the availability of better solutions such as electric heat pumps and decarbonized district heating and cooling.¹⁵

The International Energy Agency’s net zero scenario concludes that fossil fuel boilers should not be installed post-2025 for a cost-effective pathway to net-zero.¹⁶ In this context, using recovery funding for gas infrastructure may send conflicting signals and increase the costs of the transition to the countries that choose to do so. Furthermore, there is a risk that fossil fuel investments that were withdrawn from the Recovery and Resilience Facility will now be supported through other domestic or European funding sources. This makes it important to ensure a coherent exclusion of fossil fuel financing across all funding sources.

Hydrogen has received a particularly high degree of interest from policymakers recently. It is, therefore, not surprising that it featured strongly across recovery plans. Altogether, in the plans we analysed, we identified total investments of ca. €12.7bn (23% of all energy investments) in hydrogen, spanning all parts of the value chain (see table in annex 1, below). Most of the plans emphasize the development of renewable hydrogen with a focus on those demand areas in which hydrogen can most effectively contribute to the green transition, suggesting that RRF funds will indeed be used strategically for the development of hydrogen.

Two caveats are important to consider here. First, the European Commission and national governments have agreed on specific targets which the respective member states must achieve for funding to be disbursed – and these targets differ between countries. For instance, while

some countries will focus on “renewable” hydrogen only (such as Portugal and Spain), others may include non-renewable, “low-carbon” hydrogen. Furthermore, some national targets are remarkably vague. The targets to be achieved by Germany are, for example, defined only in terms of amounts of funding disbursed, without specific criteria on what type of hydrogen activities can be supported through these funds.¹⁷

As a second caveat, as noted above, the development of renewable hydrogen production, alongside with other investments in electrification in RRP, will further increase the urgency of massively ramping up the deployment of renewable energy generation in Europe. Policymakers must make this a top priority issue, as it is an underlying condition for the success of their renewable hydrogen plans, among others.

Lastly, there are some individual projects which, if realized, could undermine the credibility of the Recovery and Resilience Facility’s contribution to a green transition, such as plans by the Bulgarian government to support the construction of at least 1 GW of fossil gas power generation capacities through EU recovery funds.¹⁸ Such an investment would be the only investment in significant new fossil fuel power generation among the national plans, and should be avoided both to prevent damage to the EU Recovery and Resilience Facility overall as well as to avoid locking individual countries into a slower and more burdensome green transition path, with other countries focussing on fully sustainable solutions and hence progressing more quickly. Importantly, it must be noted that a just coal phase out can and should be designed in a way that does not primarily rely on significant additions of fossil gas power generation.

CONCLUSIONS AND OUTLOOK

EU member states’ national recovery planning was often not fully aligned with the strategic needs of the green transition, and the process was not used to increase the ambition and coherence of national energy transition strategies.¹⁹ The funding provided through the EU Recovery and Resilience Facility will nonetheless help accelerate the transition to climate neutrality. Overall, the Green Recovery Tracker has identified €204bn in recovery spending that will accelerate the transition in the countries which we analyzed. 8% of the overall recovery spending is set to go to the energy sector, in comparison to 16% and 10% for the mobility and buildings sectors respectively, and a further 8% for the industry sector.

It is very likely that EU recovery funds will create a demand pull for renewable electricity through the rollout of electric end-use technologies such as heat pumps and electric vehicles. This has the potential to make a positive contribution to the green transition thanks to the ability of these devices to efficiently use clean electricity. However, the plans alone are not doing enough to fully secure these benefits, as investments into clean electricity infrastructure, both for generation and grids, are limited.

In summary, this could mean that the Recovery Facility's impact on the supply of clean electricity will be smaller than its impact on the demand for it. Regarding renewable electricity supply, which is already cost competitive in most areas of Europe, the bottleneck may less be financial support but regulatory constraints. Legislative steps to unlock the potential of renewable energy generation are therefore urgently necessary, also because they are a prerequisite for other green recovery measures to be able to make an ultimately positive impact. Such steps would also align well with the negotiations for the EU's Renewable Energy Directive and the upcoming revision of National Energy and Climate Plans. Electricity grids, however, need an urgent scale up of investments and the lack of focus on this in most recovery plans can be considered a missed opportunity. Furthermore, all these measures should be implemented alongside coherent and effective support schemes for a more efficient use of energy.

This analysis was written by Felix Heilmann. The author would like to thank Lisa Fischer, Genady Kondarev, Johanna Lehne, Helena Mölter and Adeline Rochet for valuable inputs and constructive feedback.

ANNEX 1: PLANNED HYDROGEN INVESTMENTS IN SELECTED RECOVERY PLANS

Country	Investment	Amount	Comment
Austria	Hydrogen IPCEI	€1.3bn	Focus on renewable hydrogen specified as overall target, but not for specific investments: targets defined in terms of number of projects approved.
France	Low-carbon hydrogen	€2.0bn	Target about support for “renewable and low-carbon hydrogen”, not an unambiguous focus on hydrogen produced from renewable electricity.
Germany	Hydrogen R&D	€0.7bn	Germany’s strategic focus is on green hydrogen from renewable electricity, but there is increasing talk about using hydrogen made from fossil gas. Targets are referencing funding disbursed and installation of 300MW electrolysis capacity.
	Hydrogen IPCEI	€1.5bn	
Portugal	Hydrogen and renewable gases	€1.9bn	Clear focus on “renewable hydrogen” in the targets.
Poland	Hydrogen technologies: production, storage and transportation of hydrogen	€0.8bn	No clear focus on renewable hydrogen in the national plan. Targets set by the European Commission not yet released.
Spain	Renewable hydrogen roadmap and sectoral integration	€1.6bn	Targeting the development of “renewable hydrogen clusters”, enabling both an effective production and use of hydrogen.
Romania	Developing natural gas infrastructure for hydrogen and other green gases	€0.6bn	Strong conditions would be necessary to ensure that this investment does not ultimately support fossil fuel infrastructure. Assessment and targets from the European Commission not yet released.
Finland	Low-carbon hydrogen and carbon capture and utilization in hydrogen	€1.6bn	Support for “low-carbon” hydrogen. Notably the only project for carbon capture (CCS) in any of the RRP’s analyzed.
Italy	Hydrogen production	€0.5bn	Italy’s recovery investments into gas-related activities are significant, including an additional €1.9bn for biomethane, especially when considering the funding shortfall for renewable electricity generation. Separate R&D investments could support all types of hydrogen, not just renewable hydrogen.

ANNEX 2: COUNTRIES AND MEASURES INCLUDED IN THE QUANTITATIVE ANALYSIS

Country	Recovery plans and/or measures analyzed
Austria	Recovery and Resilience Plan (April 2021)
Belgium	Recovery and Resilience Plan (April 2021)
Bulgaria	Draft Recovery and Resilience Plan (February 2021)
Czech Republic	Recovery and Resilience Plan (May 2021)
Estonia	Programming for Recovery and Resilience Facility (May 2021)
Finland	Recovery and Resilience Plan (May 2021)
France	Domestic recovery package ("France Relance", September 2020) and Recovery and Resilience Plan (April 2021)
Germany	Domestic recovery package (June 2020) and Recovery and Resilience Plan (April 2021)
Hungary	Recovery and Resilience Plan (May 2021)
Italy	Recovery and Resilience Plan (April 2021)
Latvia	Draft Recovery and Resilience Plan (January 2021)
Poland	Recovery and Resilience Plan (April 2021)
Portugal	Recovery and Resilience Plan (April 2021)
Romania	Draft Recovery and Resilience Plan (March 2021)
Slovakia	Draft Recovery and Resilience Plan (March 2021)
Slovenia	Recovery and Resilience Plan (April 2021)
Spain	Recovery and Resilience Plan (April 2021)

REFERENCES

- ¹ Federal Environmental Agency (2020). The Green New Consensus: Study Shows Broad Consensus on Green Recovery Programmes and Structural Reforms
- ² European Commission (2020). Impact Assessment: Stepping up Europe's 2030 climate ambition
- ³ Ember (2020). Vision or Division? What do National Energy and Climate Plans tell us about the EU power sector in 2030?
- ⁴ European Commission (2021). Guidance to Member States: Recovery and Resilience Plans - Part 1
- ⁵ European Commission (2021). Analysis of the recovery and resilience plan of Germany
- ⁶ European Commission (2021). Analysis of the recovery and resilience plan of Italy
- ⁷ European Commission (2021). Analysis of the recovery and resilience plan of Slovakia
- ⁸ International Energy Agency (2021). Net Zero by 2050, chapter 2.6
- ⁹ E3G (2021). Closing the Gap to Climate Neutrality, page 16
- ¹⁰ European Commission JRC (2020). Towards net-zero emissions in the EU energy system by 2050
- ¹¹ Bloomberg (2021). Building New Renewables Is Cheaper Than Burning Fossil Fuels
- ¹² For an analysis of the situation in the Visegrád states, see E3G (2021). Boosting renewable energy in the Visegrad region
- ¹³ Euractiv (2021). Czechs lead the charge against EU's 'do no harm' green criteria
- ¹⁴ European Commission (2021). Technical guidance on the application of "do no significant harm" under the Recovery and Resilience Facility Regulation
- ¹⁵ CEE Bankwatch Network (2021). The role of gas in the recovery and resilience plans
- ¹⁶ International Energy Agency (2021). Net Zero by 2050
- ¹⁷ European Commission (2021). Recovery and Resilience Plans' assessments
- ¹⁸ WWF Bulgaria et al. (2021). NGO statement on gas investment in the Bulgarian NRRP
- ¹⁹ Green Recovery Tracker (2021). Is the EU Recovery and Resilience Facility enabling a Green Recovery?